

FIG. 1a

|                          |                              |   |     |
|--------------------------|------------------------------|---|-----|
| <i>M. bovis</i>          | -----ATA-----                | TGTTCTTTGAAAAC <b>TGAATAG</b> TAAAAATATTTT    | 142 |
| <i>M. primatum</i>       | -----TT-----                 | TGTTCTTTGAAAAC <b>TGAATAG</b> TAAAAATATTTT    | 181 |
| <i>M. farinosa</i>       | -----ATT-----                | TGTTCTTTGAAAAC <b>TGAATAG</b> TAAA--TTTTT     | 177 |
| <i>M. Uva leucon</i>     | -----TT-----                 | TGTTCTTTGAAAAC <b>TGAATAG</b> TAAA--TTTTA     | 159 |
| <i>M. spermatophilus</i> | -----AT-----                 | TGTTCTTTGAAAAC <b>TGAATAG</b> TAAA--TTTTT     | 196 |
| <i>M. synoviae</i>       | -----AAI-----                | TGTTCTTTGAAAAC <b>TGAATAG</b> TAAA--TTT       | 100 |
| <i>M. neurolyticus</i>   | TAATAAATGTTTT--              | AATATATTCTTTGAAAAC <b>TGAATAG</b> CAAA--TA--T | 176 |
| <i>M. pulchra</i>        | -AACAAATA-----               | GTTCTTTGAAAAC <b>TGAATAG</b> CATA--TAAAT      | 159 |
| <i>M. hyarhinia</i>      | -----ATA-----                | GTTCTTTGAAAAC <b>TGAATAG</b> CAAA--TAA        | 112 |
| <i>M. arduus</i>         | -----TT-----                 | TGTTCTTTGAAAAC <b>TGAATAG</b> -----T          | 115 |
| <i>M. fauvelus</i>       | -----TT-----                 | TGTTCTTTGAAAAC <b>TGAATAG</b> -----T          | 123 |
| <i>M. orala</i>          | -----II-----                 | TGTTCTTTGAAAAC <b>TGAATAG</b> -----T          | 108 |
| <i>M. hyosynoviae</i>    | -----TT-----                 | TGTTCTTTGAAAAC <b>TGAATAG</b> -----T          | 119 |
| <i>M. salinarum</i>      | -----TT-----                 | TGTTCTTTGAAAAC <b>TGAATAG</b> -----T          | 115 |
| <i>M. falsaria</i>       | -----TT-----                 | TGTTCTTTGAAAAC <b>TGAATAG</b> -----T          | 92  |
| <i>M. furiosa</i>        | -----TT-----                 | TGTTCTTTGAAAAC <b>TGAATAG</b> -----T          | 97  |
| <i>M. arginini</i>       | -----TT-----                 | TGTTCTTTGAAAAC <b>TGAATAG</b> -----T          | 93  |
| <i>M. oloae</i>          | -----II-----                 | TGTTCTTTGAAAAC <b>TGAATAG</b> -----T          | 95  |
| <i>M. genitalis</i>      | CCAGTTCTGAAAG--AATGTTTTTGAA  | AGTTCTTTGAAAAC <b>TGAATAG</b> CACA-----       | 160 |
| <i>M. pneumoniae</i>     | CCAGTTCTGAAAG--AACATTTCCGC-- | TTCTTTGAAAAC <b>TGAATAG</b> CACA-----         | 190 |
| <i>M. pirus</i>          | TAAATTTTTAAAGTAGTAGAGATGG--  | TTCTTTGAAAAC <b>TGAATAG</b> CACA-----         | 213 |
| <i>M. suis</i>           | TT-----                      | CTTTGAAAAC <b>TGAATAG</b> TTGTA-----          | 106 |
| <i>M. penetrans</i>      | TT-----                      | CTTTGAAAAC <b>TGAATAG</b> TTATAA-----         | 164 |
| <i>U. urealyticus</i>    | TTAAITATATG--GATGATCGA       | TTCTTTGAAAAC <b>TGAATAG</b> TTATAA-----       | 199 |

\*\*\*\*.\*\*\*\*\* \*

FIG. 1b

|                       |  |     |
|-----------------------|--|-----|
| <i>M. arthritidis</i> | AAA-----CATCGTATCCAGTTTGGAGAGACTAAAGTTCTCTCTTTGTTCTTTGMAAAC    | 108 |
| <i>M. taubium</i>     | AAA-----CATCGTATCCAGTTTGGAGAGACTAAAGTTCTCTCTTTGTTCTTTGMAAAC    | 88  |
| <i>M. falconis</i>    | TAA-----ATTTCGATCCAGTTTGGAGAGACTA-----ACTCTCTTTT-GTTCTTTGMAAAC | 85  |
| <i>M. hominis</i>     | AAAAAAATTTCGATCCAGTTTGGAGAGATTAA-TCTCTCG-----GTTCTTTGMAAAC     | 80  |
| <i>M. arginini</i>    | AAA-TATTTCGATCCAGTTTGGAGAGACTA-TCTCTCAATT-GTTCTTTGMAAAC        | 86  |
| <i>M. cloacae</i>     | GAATTAAATTTCGATCCAGTTTGGAGAGACT-TCTCTCAATTGTTCTTTGMAAAC        | 89  |
| <i>M. hyosynoviae</i> | CA-----ATTTCGATCCAGTTTGGAGAGATTAT-TCTCTCTTTT-GTTCTTTGMAAAC     | 113 |
| <i>M. orale</i>       | CAA-----ATTTCGATCCAGTTTGGAGAGACTAT-CTCTCATTT-ATTCTTTGMAAAC     | 102 |
|                       | * * ***** *  |     |
| <i>M. arthritidis</i> | --TTAAAAAATTAATATTTCAAA-GTTTAGATCAAOCCTATAGAATACAA             | 173 |
| <i>M. taubium</i>     | --TTAAAAAATTAATATTTCAAA-GTTTAGATCAAOCCTATAGAATACAA             | 153 |
| <i>M. falconis</i>    | ATTAA--TTAATTAATATTTCAAA-GTTTAGATCAAOCCTATAGAATACAA            | 150 |
| <i>M. hominis</i>     | --TA--TTAATTAATATTTCAAA-GTTTAGATCAAOC-ATAGAATATTT              | 141 |
| <i>M. arginini</i>    | ATTAAATTTATTAATATTTCAAA-GTTTAGATCAAOCCTATAGAATATAT             | 153 |
| <i>M. cloacae</i>     | --TCAATAAATTAATATTTCAAATGTTTAGATCAAOCCTATAGAATATTC             | 154 |
| <i>M. hyosynoviae</i> | A-TTATCAAATTAATATTTCAAA-GTTTAGATCAAOCCTATAGAATATTC             | 178 |
| <i>M. orale</i>       | --TTAAAAATTAATATTCAAAA-ATTTAGATCAAOCCTATAGAATATTC              | 166 |
|                       | ***** * ***** *  |     |

FIG. 1c

|                        |                         |                       |                   |     |
|------------------------|-------------------------|-----------------------|-------------------|-----|
| <i>M. bovis</i>        | TTATTAAATAGBTCAAAAGCTA  | ATATCTAGT TTTGAGGAGCA | TTTCTCTCAT        | 144 |
| <i>M. primatum</i>     | TT--TAATAGGGTCCGAGCTT   | ATATCTAGT TTTGAGGAGCA | TTTCTCTCTT        | 148 |
| <i>M. fermentans</i>   | TTT TT TATGGGTCTAAAGCTT | ATATCTAGT TTTGAGGAGCA | ATAT TTT TCTCTCAT | 146 |
| <i>M. opalescens</i>   | T-----ATGTTCTACAAAGCT   | ATATCTAGT TTTGAGGAGCA | TTTCTCTCTT        | 129 |
| <i>M. spermophilum</i> | TT--TTATGGCTTAAAGTCT    | ATATCTAGT TTTGAGGAGCA | TCTCTCTAAT        | 186 |
| <i>M. synoviae</i>     | GCTTT TTTTGGCTTGGGCTAT  | GTATTTAGT TTTGAGGAGCA | CTCTCTTAAAA       | 141 |
|                        | * *                     | * **                  | *****             | **  |

|                        |   |     |       |     |     |   |   |
|------------------------|---|-----|-------|-----|-----|---|---|
| <i>M. bovis</i>        | ATGTTCTTTGAAAACCTGAATAGTAAATATTTTTCATATTTACACGACATGAAA    | 201 |       |     |     |   |   |
| <i>M. primatum</i>     | -TGTTCTTTGAAAACCTGAATAGTAAATATTTTTCATATTTACACGACATGCAACTC | 207 |       |     |     |   |   |
| <i>M. fermentans</i>   | TTGTTCTTTGAAAACCTGAATAGTAAATTTTTCATATTTACACGACATGAAA      | 200 |       |     |     |   |   |
| <i>M. opalescens</i>   | -TGTTCTTTGAAAACCTGAATAGTAAATTTTTCATATTTACACGACATGATA      | 182 |       |     |     |   |   |
| <i>M. spermophilum</i> | -TGTTCTTTGAAAACCTGAATAGTAAATTTTTCATATTTACACGACATGTAAA     | 219 |       |     |     |   |   |
| <i>M. synoviae</i>     | TTGTTCTTTGAAAACCTGAATAGTAAATTTTTCATATTTACACGACATGAAAT     | 193 |       |     |     |   |   |
|                        | *****   | *   | ***** | *** | *** | * | * |

|                        |                   |                  |                           |                  |     |
|------------------------|-------------------|------------------|---------------------------|------------------|-----|
| <i>M. bovis</i>        | ---ATCAA---TTAA   | GGTTAATTGTTTGGAT | -CATCGAGT                 | ---AAGTCATATTTA  | 250 |
| <i>M. primatum</i>     | CCATCAAAAATTTAA   | GGTTAATTGTTTGGAT | -CATCGASA                 | ---AATCATATTTAA  | 261 |
| <i>M. fermentans</i>   | ---TTAAA---TTAAA  | GGTTAATTGTTTGGAT | TCATCGASA                 | ---AATCATATTTAA  | 250 |
| <i>M. opalescens</i>   | ---ATTAAATTGATTTA | GGTTAATTGTTTGGAT | -CATCGASATAAAAACAATCATAAA |                  | 238 |
| <i>M. spermophilum</i> | TAATTGAA---TTAA   | GGTTAATTGTTTGGAT | TCATCGASA                 | ---TAGTCATTTTAAA | 270 |
| <i>M. synoviae</i>     | ---ATAAATTAAATTAA | GGTTAATTGTTTGGAT | -ACCGAGTT                 | -TAAATTAT-TGAA   | 243 |
|                        | * * *             | *****            | ***                       | * **             | *   |

|                        |                         |                     |                      |       |
|------------------------|-------------------------|---------------------|----------------------|-------|
| <i>M. bovis</i>        | -ATATGATTCATTGAAATGTCCT | AAAATACACATCTAAA    | ---ACTAACACAATAGGA   | 304   |
| <i>M. primatum</i>     | -TATGATTCATTGAAATGTCCT  | AAAATACACATCTTAA    | ---ACTAA---ACAATAGGG | 313   |
| <i>M. fermentans</i>   | -TATGATTCATTGAAATGTCCT  | AAAATACACATCATAACA  | ---AACTATAACAAATAGGA | 306   |
| <i>M. opalescens</i>   | T TTTGATTCATTGAAATGTCCT | AAAATACACATCATAATGT | ---AACCAATACAAATAGGA | 296   |
| <i>M. spermophilum</i> | A AATGATTCATTGAAATGTCCT | AAAATACACATCAAAACA  | ACAATCTATACAAATAGGA  | 330   |
| <i>M. synoviae</i>     | -AATAATTTATTAAATGTCCT   | TGAATACA---TCATAAC  | ---AAATAACAAATAGGA   | 295   |
|                        | * ** *                  | *****               | *****                | ***** |

**FIG. 1d**

|                       |  |  |    |
|-----------------------|--|--|----|
| <i>M. muris</i>       | CCCTCCTTCTATCGGAGTACA  | TTTAGATTATTACACCATATTAGAATATTTTAAATATT   | 60 |
| <i>M. penetrans</i>   | CCCTCCTTCTATCGGAGTACA  | TTAAAGCTAAGTAACAAATATTAG-----ATATATT     | 62 |
| <i>U. urealyticum</i> | CCCTCCTTCT-TCGGAGTAAA  | TTTAAAT---TTACGTACTAATAAG-----TGTACATTTT | 63 |
|                       | *****  | *****                                    |    |
| <i>M. muris</i>       | TGTGTACTTT-TTATAGAAAACCCCCACATCAATAAACCTAA-----ATAAAAAATTTT    | 115                                      |    |
| <i>M. penetrans</i>   | TGTGTACTTTATTAAAAAAATCCCAAACTGAAATTTATCTCATGTTATATAAGAGTAAGT   | 112                                      |    |
| <i>U. urealyticum</i> | TATTAAAAATCCATATGAATATAAGCCACCTTTTAAAAAATTTT-----TAAAAATTCATAT | 109                                      |    |
|                       | * * * * *  |  |    |
| <i>M. muris</i>       | TTTGGG-CGGATTCTATTAGTTTGGAGGATA-TTTCTCTCATGATAGTT-----         | 165                                      |    |
| <i>M. penetrans</i>   | TCTAGG-CGGATTCTATTAGTTTGGAGGAT-TTTCTCTCAAGATAGTT-----          | 162                                      |    |
| <i>U. urealyticum</i> | -----GG-CGGATTCTATTAGTTTGGAGGTTTATTCCTCCCATAAATAATTATTATT      | 165                                      |    |
|                       | ** *****   |  |    |

FIG. 1e

|                        |   |     |
|------------------------|---|-----|
| <i>M. pulmonis</i>     | CTACGGAGTACAAAACCATTTTTTTTAAATTTGGCATTTT-----TCTATCAATAGTAT-- | 54  |
| <i>M. neurolyticum</i> | CTACGGAGTACACATACATCTTATTAAATTTGGTTATTTAAAAATCCTTTTATATAAAT   | 60  |
|                        | ***** + *** ** * * * * * * * * * * *                          |     |
| <i>M. pulmonis</i>     | -AGAAAGTCCTTATGTGTA-CTTGCCAATTAGATATCTAGTATTCACTTTTGAAGTTCT   | 113 |
| <i>M. neurolyticum</i> | AAAAAGGTTATTATGGG-CTTGCCAATAG-TTTTCTATCTAGTTTGAAGTTT          | 114 |
|                        | + ** ** * * * * * * * * * * * * * * * * *                     |     |
| <i>M. pulmonis</i>     | A-----TCTTTCAAA-----ACAAATA-----CTTCTTTAAAAACTCAATAGCATAT     | 156 |
| <i>M. neurolyticum</i> | AATTTTTTCTTTCTAATTAAATAAATGTTTTAATATATTCTTTGAAAACTCAATAGCAAAT | 174 |
|                        | *                     |     |
| <i>M. pulmonis</i>     | AAATTAATATGATAAGGTCATCAAAATGTAAAATTTTGTATCGAGTCATTTTTTAACAA   | 215 |
| <i>M. neurolyticum</i> | ---ATTGAAATTTTAAATTCATAATATTCAACAACGACATTACAACAACGAGTCCTAACTG | 232 |
|                        | *** ** * * * * * * * * * * * * * * * * *                      |     |
| <i>M. pulmonis</i>     | TTT-BTTAAAAAAT-----AAAATAGATACCTTAAG-ATAACATCAAAAA---ATAAAT   | 265 |
| <i>M. neurolyticum</i> | TTTTATTGAACAGTTAGCTTAAATAGATACCTTAAGTATAAATCTAAAACAATAGGC     | 292 |
|                        | *** ** * * * * * * * * * * * * * * * * *                      |     |

FIG. 1f

|                      |  |     |
|----------------------|--|-----|
| <i>M. pneumoniae</i> | AACATTTCCGC-----TTCTTTCAAACTGAAACGACAA-TCTTTCTAGTTCCA-----       | 205 |
| <i>M. genitalium</i> | AATGTTTTTGAACAGTTCTTTTCAAACTGAAACGACAA-TCTTTCTAGTTCCA-----       | 175 |
| <i>M. pirum</i>      | AGTAGAGATGG-----TTCTTTGAAAACCTGCATACAACAAATCTTTCTAGTTCC          | 235 |
|                      | *                        |     |
| <i>M. pneumoniae</i> | ---AA-TAANTACCAAAAGG---ATCAATAC---AATAAGTTACTAAGGGCTTATGGT       | 252 |
| <i>M. genitalium</i> | ---AAAATAAATACCAAAAGG---ATCAATAC---AATAAGTTACTAAGGGCTTATGGT      | 224 |
| <i>M. pirum</i>      | AATTAACACAAATATCAATATGCTAATGGATATCAAA---AATAAGTTACTAAGGGCTTATGGT | 295 |
|                      | **                       |     |

FIG. 2a

|                       |   |
|-----------------------|---|
| <i>A. axanthum</i> /  | AAACAATTCTTCATTTGTTCATCATATTCAAGTTTTCGACACTT----- 88            |
| <i>A. oculi</i> /     | AAACAATTCTCTAAATTTGTTCATCATATTCAAGTTTTCGACACTTATGTCA----- 110   |
| <i>A. laidlawii</i> / | TAACATTCTCTAAATTTGTTCATCATATTCAAGTTTTCGACACTTAAATGTCACTCAAC 108 |
| <i>A. laidlawii</i> / | TAAATATTCTCTAAATTTGTTCATCATATTCAAGTTTTCGACACTT----- 95          |
| <i>A. modicum</i> /   | TACAATCATATATCATTTTCATCATATTCAAGTTTTCGACACTTTCCTTC----- 78      |

\* \* \* \* \*

FIG. 2b

|                       |  |
|-----------------------|--|
| <i>A. laidlawii</i> / | CAAGTAACCACTATTATAATAAGTGGGGCTCTAGCTCAAGTTGGTTAGACCACTGGCT 168 |
| <i>A. oculi</i> /     | CAA-----AAGTGGGGCTCTAGCTCAAGTTGGTTAGACCACTGGCT 155             |
| <i>A. axanthum</i> /  | TAG-----TAAAGGGGCTCTAGCTCAAGTTGGTTAGACCACTGGCT 133             |
| <i>A. modicum</i> /   | TTA-----TGGGGCTCTAGCTCAAGTTGGTTAGACCACTGGCT 122                |

\* \* \* \* \*

|                       |  |
|-----------------------|--|
| <i>A. laidlawii</i> / | TGATAAGCGTGGGGTCAATGGTTCAAGTCCATTGAGGCCACCATTAATAAAATACATA 227 |
| <i>A. oculi</i> /     | TGATAAGCGTGGGGTCAATGGTTCAAGTCCATTGAGGCCACCAT----- 201          |
| <i>A. axanthum</i> /  | TGATAAGCGTGGGGTCAATGGTTCAAGTCCATTGAGGCCACCATTTATAT----- 184    |
| <i>A. modicum</i> /   | TGATAAGCGTGGGGTCAATGGTTCAAGTCCATTGAGGCCACCATTATAG----- 172     |

\* \* \* \* \*

FIG. 2c

|                       |  |
|-----------------------|--|
| <i>A. laidlawii</i> / | GTAA---TATCTCTCAATTTGTTCATCATATTCAAGTTTGAAGACCTTAA---AGTAATT-- 104 |
| <i>A. oculi</i> /     | GCAAGCAATTCCTCA--TTTGTTCATCATATTCAAGTTTGAAGACCTTAA---TCCAAGTG 115  |
| <i>A. axanthum</i> /  | ---AAACAATTCTCTCA--TTTGTTCATCATATTCAAGTTTGAAGACCTTTC---ACTTGTTC 98 |
| <i>A. modicum</i> /   | -----CATTCATCATATTCAAGTTTGAAGACCTTTCCTTCTAATAT 84                  |

\* \* \* \* \*

|                       |   |
|-----------------------|---|
| <i>A. laidlawii</i> / | ---TAAGTGTTCGAAGAGTAAAGAAAGTCTTTGAAGAGTASATAAA--GATGTCTGAAA-- 160   |
| <i>A. oculi</i> /     | A---TTGGTTCCTTAAGTATCAAAATAAGTCTTTGAAGAGTASATAAA--GATGTCTGAAA-- 172 |
| <i>A. axanthum</i> /  | C---TCAAG-----AAGATCAAAATAAGTCTTTGAAGAGTASATAAA--GAAGTCTGAAAT 150   |
| <i>A. modicum</i> /   | AAGTAAGATCTTTGAAAGAGTATTAATTCCTGTCTGAA--CAATAAT--ATAAAGAGACAA 143   |

\* \* \* \* \*

FIG. 3a

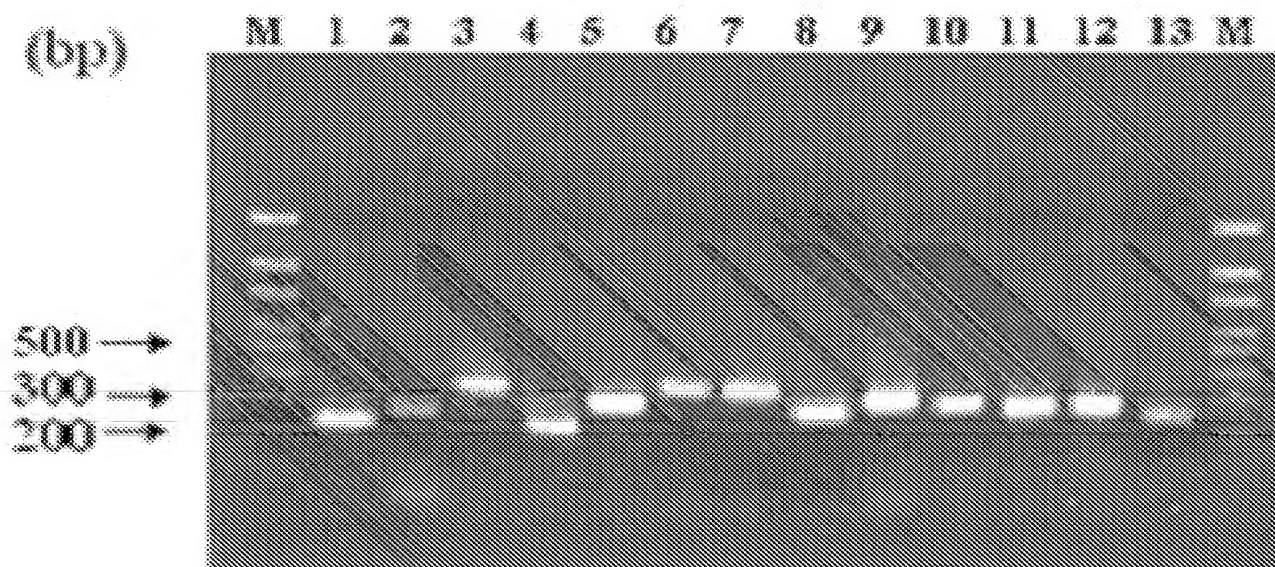
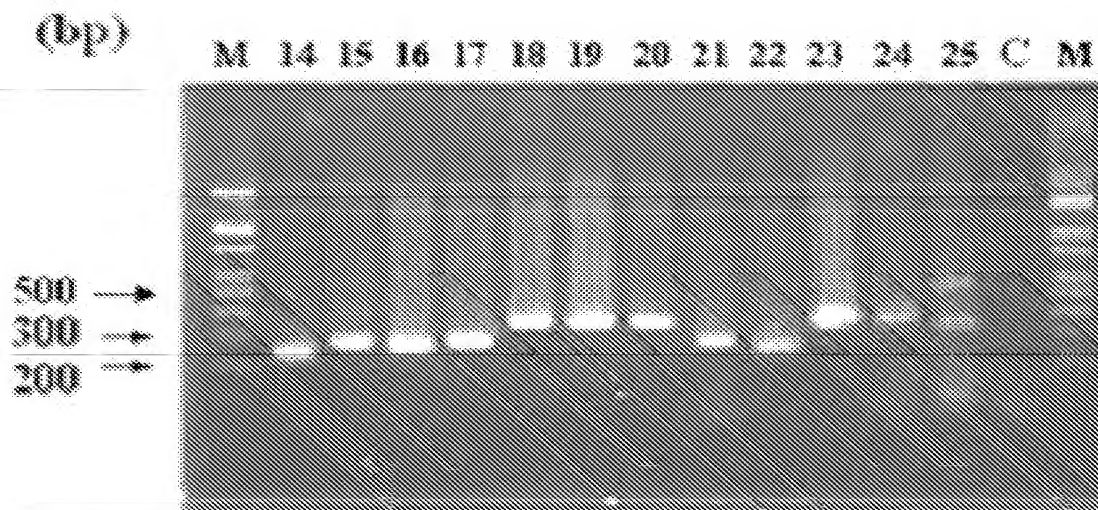


FIG. 3b



**FIG. 4**

|                                |                                   |                               |                               |                               |                             |
|--------------------------------|-----------------------------------|-------------------------------|-------------------------------|-------------------------------|-----------------------------|
| MP-C<br>[7]                    | <i>M. arginini</i><br>[28]        | <i>M. arthritidis</i><br>[30] | <i>M. fermentans</i><br>[33]  | <i>M. hominis</i><br>[38]     | <i>M. hyorhinis</i><br>[41] |
| <i>M. neurolyticum</i><br>[49] | <i>M. opalescens</i><br>[52]      | <i>M. orale</i><br>[58]       | <i>M. pirum</i><br>[61]       | <i>M. penetrans</i><br>[69]   | <i>M. pulmonis</i><br>[75]  |
| <i>M. salivarium</i><br>[83]   | <i>M. cloacale</i><br>[85]        | <i>M. fakonis</i><br>[87]     | <i>M. faucium</i><br>[30]     | <i>M. hyosynoviae</i><br>[90] | <i>M. muris</i><br>[92]     |
| <i>M. primatum</i><br>[96]     | <i>M. spermatophilum</i><br>[100] | <i>M. synoviae</i><br>[105]   | <i>M. pneumoniae</i><br>[110] | <i>M. genitalium</i><br>[114] | <i>M. bovis</i><br>[120]    |
| <i>U. urealyticum</i><br>[122] |                                   |                               | AP-C<br>[22]                  | <i>A. laidlawii</i><br>[128]  | MP-C<br>[7]                 |

\*[.] corresponds to SEQ ID No's of Tables 2 and 3.



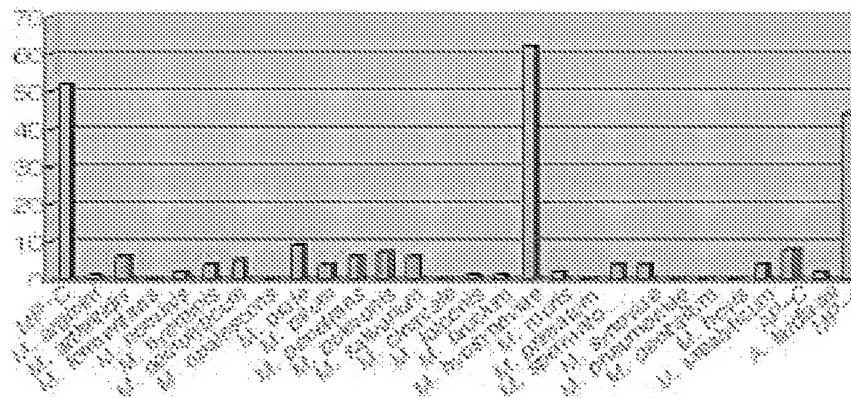
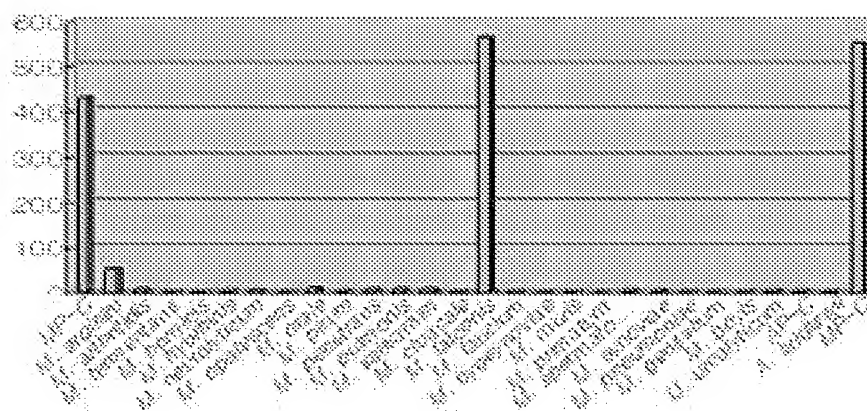
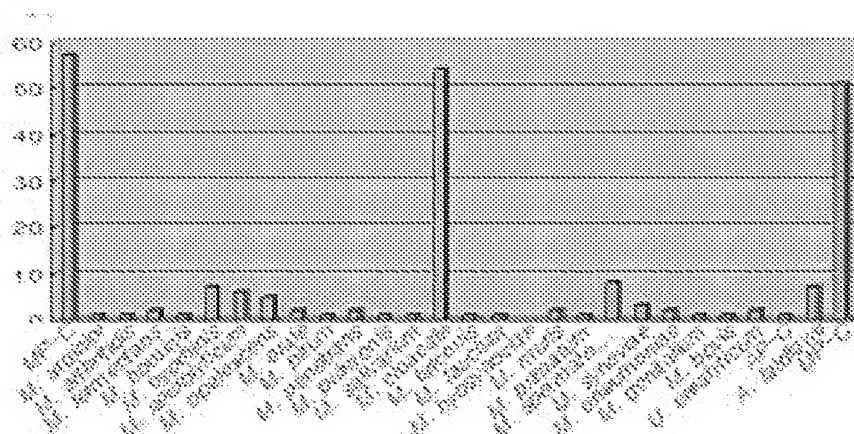


FIG. 5d

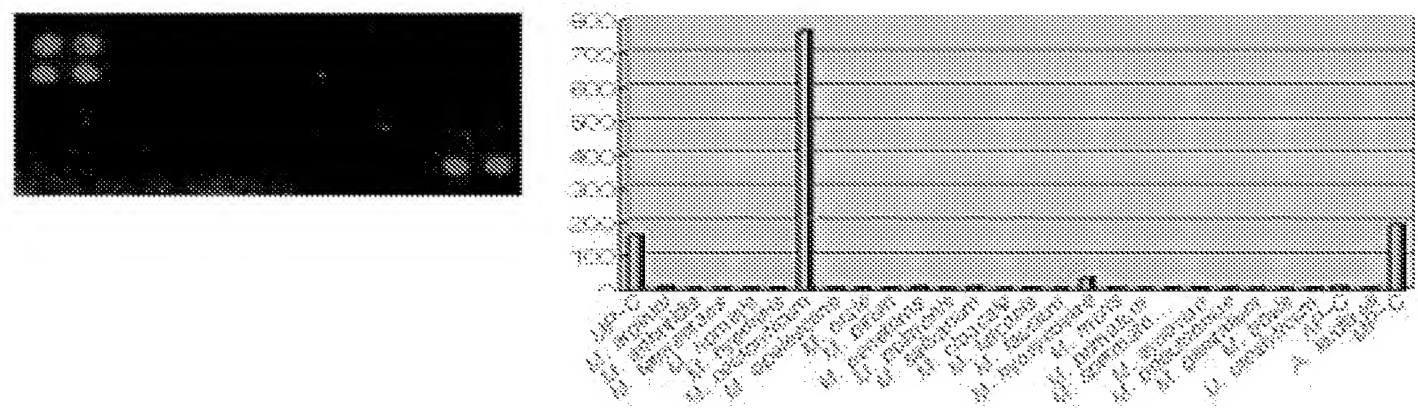


FIG. 5e

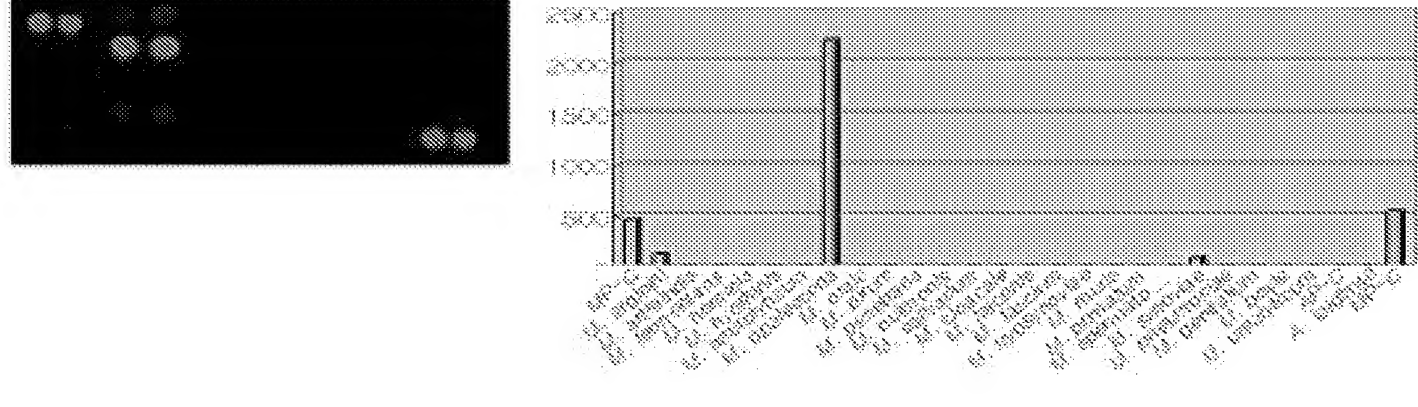
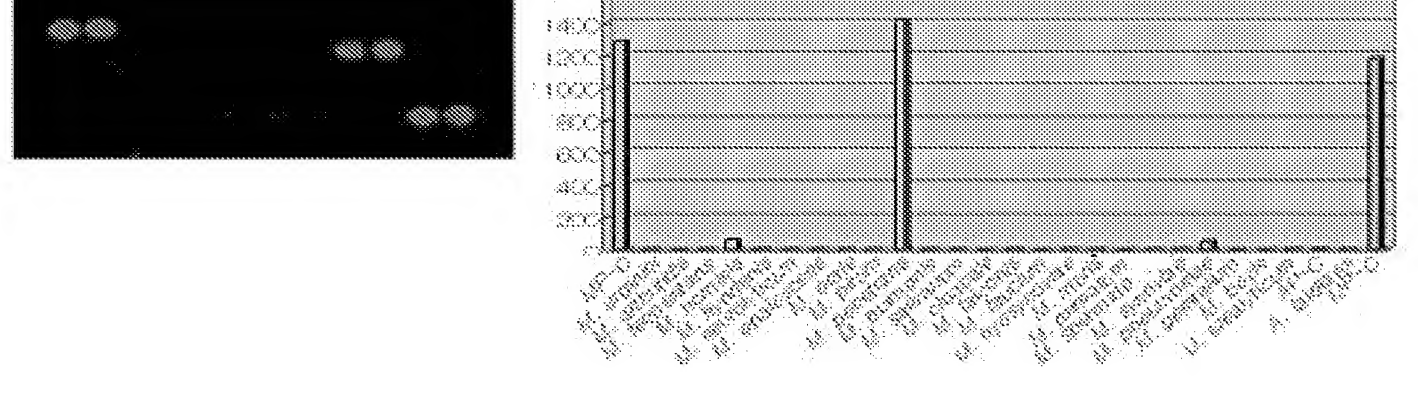
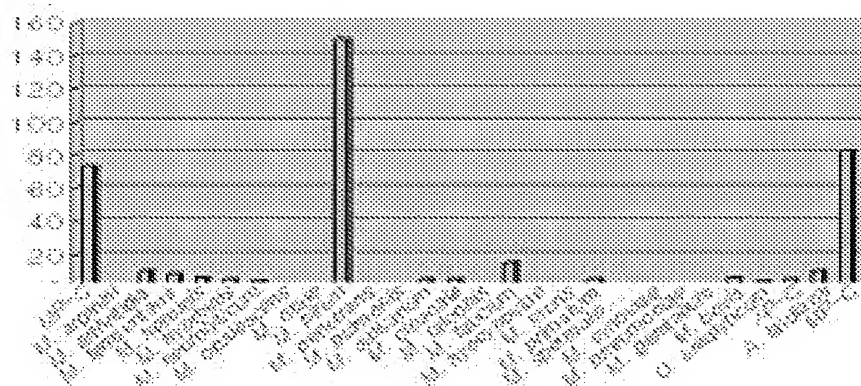


FIG. 5f



**FIG. 5g**



**FIG. 5h**

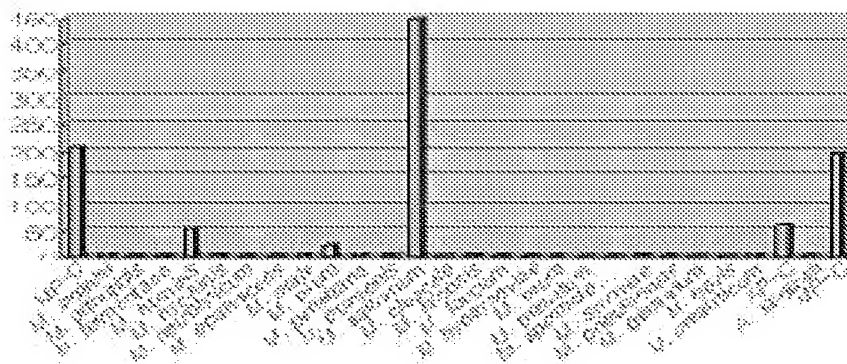
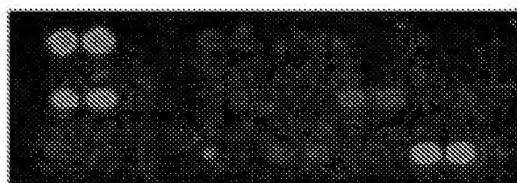


FIG. 5i

